

Exercise 70

Absolute Value Evaluate each expression.

$$(a) \quad \left| 2 - |-12| \right| \qquad (b) \quad -1 - \left| 1 - |-1| \right|$$

Solution

The absolute value of a number is defined by

$$|x| = \begin{cases} x & \text{if } x > 0 \\ -x & \text{if } x < 0 \end{cases}.$$

Use this fact to evaluate the first expression.

$$\begin{aligned} \left| 2 - |-12| \right| &= \left| 2 - (12) \right| \\ &= |-10| \\ &= 10 \end{aligned}$$

Evaluate the second expression.

$$\begin{aligned} -1 - \left| 1 - |-1| \right| &= -1 - \left| 1 - (1) \right| \\ &= -1 - |0| \\ &= -1 \end{aligned}$$